

INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

10th November 2010

Subject ST7 - General Insurance: Reserving & Capital Modelling

Time allowed: Three hours (14.45* – 18.00 Hrs)

Total Marks: 100

INSTRUCTIONS TO THE CANDIDATES

1. *Please read the instructions on the front page of answer booklet and instructions to examinees sent along with hall ticket carefully and follow without exception*
2. ** You have 15 minutes at the start of the examination in which to read the questions. You are strongly encouraged to use this time for reading only, but notes may be made. You then have three hours to complete the paper.*
3. *You must not start writing your answers in the answer sheet until instructed to do so by the supervisor*
4. *The answers are not expected to be any country or jurisdiction specific. However, if Examples/illustrations are required for any answer, the country or jurisdiction from which they are drawn should be mentioned.*
5. *Attempt all questions, beginning your answer to each question on a separate sheet.*
6. *Mark allocations are shown in brackets.*

AT THE END OF THE EXAMINATION

Please return your answer book and this question paper to the supervisor separately.

- Q. 1)** (i) Describe briefly the role of brokers in general insurance (5)
- (ii) Describe how ILW contracts are designed (4)
- [9]**
- Q. 2)** (i) List circumstances under which a general insurance company may not have data for setting up best estimate provisions in its claim reserves. (5)
- (ii) Discuss briefly how the insurer might attempt to handle such circumstances while setting up best estimate reserves for claims. (4)
- [9]**
- Q. 3)** The following claim information relates to own damage claims of the private motor account of a large general insurance company.

| Financial Year ended 31 March | Number of claims notified in year | Cumulative payments up to 31/03/10 Rupees 000s | Outstanding claim Estimates as at 31/03/10 Rupees 000s |
|-------------------------------|-----------------------------------|---|---|
| 2005 | 8,300 | 41,100 | 3,550 |
| 2006 | 15,200 | 98,750 | 9,275 |
| 2007 | 64,570 | 427,780 | 36,100 |
| 2008 | 69,100 | 452,350 | 39,200 |
| 2009 | 92,300 | 625,000 | 30,210 |
| 2010 | 81,500 | 470,000 | |

- (i) Use an average cost per claim method to estimate the outstanding claim amounts at 31/03/10, for all claims notified in the financial year ending 31 March 2010, stating any assumptions made and explaining your calculations. (11)
- (ii) Describe the steps you would take to apply an inflation adjusted average cost per claim method to calculate the outstanding claim amount as at 31/03/10. (7)
- [18]**
- Q. 4)** The insurance regulator of a country, in which a large insurance company XYZ has been transacting business under all classes of business, has announced its intention to introduce legislation covering two proposals, as follows:

Proposal A: introduce a new tax at 0.5% of motor premiums to set up and fund a mechanism for providing support payments to victims of road accidents where the vehicle is not insured or the driver/ owner is not traceable. The proposal announced during the course of the current financial year will be made effective from the beginning of the current financial year.

Proposal B: introduce a new provision for limiting salary and other remuneration to top management staff of insurance companies in such a way that payments are not too high in relation to levels obtaining in government departments.

The insurer has in place an economic capital model for internal guidance on capital

requirements.

For this economic capital model:

- (a) State the three most important types of risk which may need review and fresh evaluation as a result of each of the proposals A and B.
- (b) Discuss briefly the likely effects under these three types of risk as a result of the proposals.

[11]

Q. 5) IAIS expects supervisors in a jurisdiction to ensure that insurers follow minimum requirements as part of best practices, as a standard on ALM.

- (i) List such minimum requirements. (5)

A medium sized general insurance company has been in operation for the last 5 years, specialising in commercial risks with good growth rates over the last three years. At the end of the most recent year of account, over 65% of its business is secured through brokers and the company is desirous of strengthening its relationships in this distribution channel. The company's representative has had discussions with the supervisory authority on its statutory filings and in particular the ALM model being used by it. The authority indicated on an informal basis that the ALM model does not adequately allow for the special features of the company's operations and suggested a reconsideration of the features in the model.

- (ii) Discuss those features of the company's business written through brokers which need to be considered in the model. (You are not required to consider other features of the company's business), (7)

- (iii) State the key principles you would follow in a revision of the ALM model to address the concerns of the supervisory authority on the appropriateness of the model. (5)

[17]

Q. 6) (i) Explain briefly the importance of adopting an appropriate level of granularity in a capital modelling exercise. (3)

- (ii) Discuss briefly the reasons why a strict theoretical level of granularity may not be used in practice. (5)

A general insurance company operating in a country with a large population has had a generally successful motor portfolio for many years in the private car segment. During the last three years of its business, the company has also had good growth of business in the motor cycle segment with the segment comprising 25% of the total motor premiums at the end of the most recent accounting year. The management is considering further growth in this segment and has now decided to set up a capital model to identify distinctly the capital required for this segment.

- (iii) Describe briefly the subdivisions the management might consider in that part of the capital model which relates to claim experience. (4)

- (iv) Outline the steps you would go through, as the Actuary advising management on this aspect, to conclude on what the subdivisions might actually be for incorporation in the model. (4)

[16]

- Q. 7)** You are the actuary of a large general insurance company and have just submitted a document to the chief executive of the company on the capital model being adopted by the company. The chief executive who has joined the company recently has, on a review of the document, asked you to give a further note on how the issues relating to the company's reinsurance programme have been dealt with in the capital model.

Set out a description of the points to be included for such a note. [12]

- Q. 8)** A general insurance company which writes mainly motor and household business has published its accounts recently for the financial year ended 31 March 2010. The following is an extract from the published accounts.

(All figures in units of 10 mn Rupees)

| | Current year (2009-10) | Previous year (2008-09) |
|---|------------------------|-------------------------|
| Written premium net of reinsurance | 535 | 322 |
| Earned premium net of reinsurance | 495 | 305 |
| Incurred claims net of reinsurance | 465 | 245 |
| Expenses of management other than commission paid | 96 | 82 |
| Commission paid | 52 | 33 |
| Investment income on technical reserves | 71 | 38 |
| Other investment income | 25 | 15 |
| Total assets at 31 December | 625 | 395 |
| Total liabilities at 31 December | 475 | 257 |

- (i) Calculate the following for each of the two financial years
- (a) Loss ratio
 - (b) Expense ratio
 - (c) Solvency ratio (3)
- (ii) Give your comments on the ratios calculated in (i) above, with possible reasons for the features observed from the data and your calculations. (5)

[8]
